REMARKS

The allowance of claims 4-7, 9, 13-16 and 18 is noted with appreciation.

Claims 1-3, 8, 10-12, 17 and 19-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf et al. (US 6,898,254, previously cited and applied), in view of Kanai et al. (US 6,988,233). This rejection in respectfully disagreed with, and is traversed below.

All of the arguments made in the previous response are repeated, and incorporated by reference herein.

The Examiner now states that:

> Wolf **did not explicitly** detail the aspect of "determining whether the signal comprises a valid code or comprises only noise by the means for monitoring the decoder and means responsive to the monitored decoder" as recited in the instant claims 1 and 10. (emphasis in original)

It is respectfully pointed out that the language placed in quotation marks by the Examiner does not appear in either claim 1 or claim 10.

The Examiner is now using Kanai et al. for purportedly teaching the element(s) missing from Wolf et al.

Towards this end the Examiner refers to Kanai et al. at, for example, Figure 4 and col. 6, lines 13-34, and concludes that it would have been obvious "to implement the method of detecting (monitoring) a Turbo decoder for determining a valid code (valid or OK signal) from a noise (negative of NG signal) as taught by Kanai et al. in the invention of Wolf et al.

It is submitted that the proposed combination of Wolf et al. and Kanai et al. is not suggest the claimed subject matter to one skilled in the art.

As was previously argued with respect to Wolf et al., they discuss in the Background section in columns 2 and 3, a number of stopping criteria for turbo decoders have been used/proposed in the prior art. At least one considers a change in signal quality, and requires a comparison of a signal-to-noise ratio (SNR).

It is again pointed out that Wolf et al. do not disclose or suggest that they appreciate the problem(s) that can arise if a decoder attempts to decode what it believes to be a code word, that is in fact just noise. Reference in this regards can be made, for example, to the instant specification at page 8, lines 6-19.

In fact, Wolf et al. state in col. 5, lines 41-48:

> "The number of iterations performed varies, typically ranging from three to twenty. Depending on the noise pattern of a given received codeword, the decoder might reach its optimum solution after only one or two iterations. The remaining iterations would not improve performance and are a waste of processing power and time. **If the noise pattern of a received codeword is severe, the decoder may require many iterations to reach an optimum solution.**"

Based on at least this passage it would appear that if the decoder of Wolf et al. attempted to decode a noise-only signal, the decoder would simply execute a maximum possible number of iterations without ever reaching an optimum solution.

Turning now to Kanai et al., they also do not disclose or suggest that they appreciate the problem(s) that can arise if a decoder attempts to decode what it believes to be a code word, that is in fact just noise.

In fact, they repeatedly refer to the coded signals that are "given noises on a transmission path". For example, reference may be had to col. 1, lines 16-19:

"In a mobile communication field, techniques have been studied increasingly for detecting and correcting errors caused by, for example, noise on a transmission path";

and to col. 2, lines 14-28:

"These coded sequences u, y1 and y2 output from the turbo coder undergo predetermined radio transmission processing, and are transmitted as radio signals. The transmitted radio signals of **coded sequences u, y1 and y2 are usually given noises on a transmission path**, and received in a reception apparatus provided with the turbo decoder.

In the reception apparatus, coded sequences containing **coded sequences u, y1 and y2 transmitted from transmission-apparatus and each given noises on the transmission path** are received and input to the turbo decoder. Herein, a **received coded sequence of coded sequence u given noises on the transmission path is referred to as coded sequence U, a received coded sequence of coded sequence y1 given noises on the transmission path is referred to as coded sequence Y1, and a received coded sequence of coded sequence y2 given noises on the transmission path is referred to as coded sequence Y2**".

Turning to col. 6, lines 13-34, what is stated is the following:

"FIG. 4 is a block diagram illustrating a configuration of decoding section 108. Turbo decoder 301 iterates error correcting decoding **on the received coded sequences,** and outputs decoded results to error checker 302 and iteration controller 303 every time the error correcting decoding is performed. In addition, a decoded result output from turbo decoder 301 is obtained as a coded information bit sequence (i.e., error detecting code). The number of iterations is controlled by iteration controller 303 described later. Error checker 302 performs error detection on the decoded result (error detecting code) output from turbo decoder 301, thereby checks whether an error is contained in the decoded result, and outputs a check result signal (OK signal or NG signal) indicative of the check result to iteration controller 303. When determining there is an error, error checker 302 outputs a NG signal to iteration controller 303, while outputting an OK signal to iteration controller 303 when determining there is no error. Iteration controller 303 determines whether turbo decoder 301 continues or finishes the iteration decoding, and when finishing the iteration, controls turbo decoder 301 to finish the iteration decoding. Iteration controller 303 will be described later."

The "received coded sequences" are defined in col. 5, line 66, to col. 5, line 12:

> "At a receiving side, radio signals of coded sequences containing coded sequences u, y1 and y2 transmitted from transmission-apparatus and **each given noises on the transmission path** are received in antenna 105, radio reception section 106 performs radio reception processing on the radio signal, and demodulation section 107 demodulates the resultant to output to decoding section 108. **Herein, a received coded sequence of coded sequence u given noises on the transmission path is referred to as coded sequence U, a received coded sequence of coded sequence y1 given noises on the transmission path is referred to as coded sequence Y1, and a received coded sequence of coded sequence y2 given noises on the transmission path is referred to as coded sequence Y2.**"

Note can also be made of the disclosure at col. 8, lines 63-65:

> "It is because a case occurs where **when a large noise is added to a coded sequence on a transmission path**, continuing the iteration decoding does not result in no error in all the error detecting codes. By thus providing the number of iterations with an upper limit, it is possible to prevent wasteful iterations from being continued, and thereby prevent processing delay and power consumption from increasing";

and to col. 18, lines 34-39:

> "When **a large noise is added to a coded sequence on a transmission path**, there is a case that continuing the iteration decoding does not result in no errors in all the error detecting codes. Therefore, providing an upper limit is effective in a case of using this embodiment in communication systems with varied transmission path environments."

It should thus be clear that in all cases Kanai et al. assume at the input to their Turbo decoder the presence of a "coded sequence" to which noise, possibly a "large noise", has been added.

Claim 1 recites in part:

> "monitoring, during operation of the decoder on a signal received from a channel, the value of at least one extrinsic value; and
>
> based on the monitored at least one value, **determining whether the signal comprises a valid code word or comprises only noise.**" (emphasis added)

Claim 10 recites in part:

> "means for monitoring, during operation of the decoder on a signal received from the channel, the value of at least one extrinsic value; and
>
> means, responsive to the monitored at least one value, for **determining whether the signal comprises a valid code word or comprises <u>only</u> noise.**" (emphasis added)

Claim 19 recites in part:

> "during operation of the decoder on a signal received from the channel, **the value of at least one extrinsic value for use in determining whether the signal comprises a valid code word or comprises <u>only</u> noise.**" (emphasis added)

Claim 23 is drawn to a radio frequency receiver that includes:

> "circuitry operable for monitoring, during operation of the decoder on a signal received from the channel, **the value of at least one extrinsic value for use in determining whether the signal comprises a valid code word or comprises <u>only</u> noise.**" (emphasis added)

In addition, claim 28 is drawn to a decoder having an input for coupling to a signal received through a channel, and comprising:

> "a unit operable at least in response to receipt of a signal from the channel to determine, **responsive to a monitored at least one value, whether the signal comprises a valid code word to be decoded or comprises <u>only</u> noise.**" (emphasis added)

It is submitted that one skilled in the art would not find claims 1-3, 8, 10-12, 17 and 19-29 to be obvious based on the teachings of Wolf et al. in view of Kanai et al. This is true at least for the reason that one skilled in the art, when guided by the teachings of Wolf et al. in view of Kanai et al. (assuming for arguments sake only that these teachings are combinable), would not even realize that a problem existed when a decoder attempted to signal that comprises only noise, and clearly would not be guided to provide a solution to the problem as recited in claims 1-3, 8, 10-

12,17 and 19-29.

Further in this regard, and by example, claim 3 recites in part that "determining accurately **distinguishes a valid code word from noise, and also** obtains information that is indicative of the quality of a decoding process".

The cited portion of Wolf et al. does not suggest a process for distinguishing a valid code word from noise, instead it is concerned with determining a turbo decoder stopping criterion, and thus it further does not suggest also obtaining information that is indicative of the quality of a decoding process. Further, and as was argued above, Kanai et al. also assume the presence of a coded sequence to which noise is added for use in determining when to terminate iterations of the decoder. The same argument can be made with respect to claim 12.

In addition, the Applicant offers the following further arguments and distinctions.

Kanai et al teaches in the Abstract, Fig 8, and col. 19, lines 50-56 (Claim 1) that they assume that each data frame has an error detection code, and that input to a turbo decoder is a code word. The purpose of the error detection code is to provide information as to whether or not a decoded frame was successfully decoded (OK signal) or not (NG signal). The Examiner concludes on page 4 that the NG-signal can be used to distinguish a signal containing a code word from a signal not carrying code word. However, this is not true since a decoded frame corresponding to a signal consisting only of noise does not have any kind of structure. In particular, such a decoded frame does not have an error detection code. Therefore, use of an error detector based on an error detection code is meaningless. The presence of the NG signal implies simply that the turbo decoder failed to decode a data frame, and one cannot conclude from the presence of the NG signal that input signal to the turbo decoder was only noise.

As such, the attempt to combine Kanai et al. with Wolf et al. does not remove the above stated problem with the use of a error detection code. Wolf et al. also assume that input signals to a turbo decoder are noisy code words. Furthermore, Wolf et al. assume, col. 7, lines 4-10, that
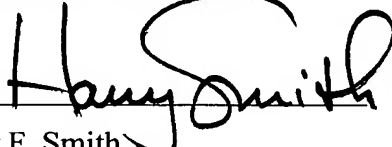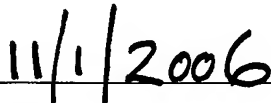
extrinsic values are distributed according to a Gaussian probability distribution. Wolf et al. do not provide any kind of information or guidance on how a distribution of extrinsic values would behave or appear when the turbo decoder attempts to decode only noise. As such, a person having ordinary skill in the art would not obtain the claimed invention by attempting to combine Kanai et al. with Wolf et al.

The Examiner is respectfully requested to reconsider and remove the rejection under 35 U.S.C. 103(a), and to also allow claims 1-3, 8, 10-12, 17 and 19-29.

An early notification of the allowance of all of the claims 1- 29 is earnestly solicited.

Respectfully submitted:

_____   11/1/2006
Harry F. Smith   Date

Reg. No.: 32,493

Customer No.: 29683

HARRINGTON & SMITH, LLP

4 Research Drive

Shelton, CT 06484-6212

Telephone: (203)925-9400

Facsimile: (203)944-0245

email: hsmith@hspatent.com

S.N. 10/696,926
Art Unit: 2133

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